

Serial Number 10/695,010
 Docket Number YOR920030018US1
 Amendment

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Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method for minimizing errors when writing information to [[a]] memory cells in a magnetic memory cell array with operating write currents, wherein the magnetic memory cell array comprises at least one reference cell cells having known operating characteristics and a magnetization with an alterable orientation, the reference cells having similar attributes, and wherein the operating write currents are modified based upon which test currents altered the orientation of the magnetization of the reference cells, the method comprising:

applying test write currents having pre-selected attributes for altering orientation of the magnetization of the reference ~~cell~~ cells, and providing each of the reference cells with a different test write current having pre-selected attributes;

determining whether or not the orientation of the magnetization in the ~~magnetic memory cell~~ reference cells was altered; and

modifying the operating write currents based upon whether or not the orientation of the magnetization in the reference ~~cell~~ cells was altered~~[[:]]~~.

2. (Currently amended) The method of claim 1 wherein the magnetic memory cell array ~~reference cell~~ further comprises ~~an array of~~ reference cells having different attributes and wherein the operating write currents are modified based upon which reference cells in the array ~~of reference cells had the orientations~~ orientation of their ~~magnetization~~ magnetizations altered by the test write current.

Serial Number 10/695,010
Docket Number YOR92003C018US1
Amendment

3. (Original) The method of claim 2 wherein each reference cell in the array of ~~reference cells~~ has a different junction size.

4. (Canceled)

5. (Original) The method of claim 1 wherein the magnetic memory cells are rotational magnetic memory cells.

6. (Currently amended) The method of claim ~~[[4]]~~ 1 wherein variations in the test write currents are generated by varying an attribute of wires carrying the test write currents to the reference cells.

7. (Currently amended) The method of claim 1 comprising sinusoidally varying test write currents, measuring a phase difference between the test write currents and the switching of the orientation of the magnetization in the reference cell, and modifying the operating write currents based upon the measured phase difference.

8. (Currently amended) A compensation circuit for determining appropriate write signals to use during a write operation to an array of magnetic memory cells wherein each magnetic memory cell in the array has a magnetization with an orientation that is alterable between at least two states, said compensation circuit comprising: a write signal generator for generating write signals that are used to selectively alter the orientation of magnetization in the magnetic memory cells in the array of magnetic memory cells and ~~[[a]]~~ test write signals; a reference cell having a magnetization with an orientation that is alterable between at least two states for receiving the test write signals from the write signal generator; and a reference cell reader for determining the orientation of the magnetization in the reference cell after the reference cell has received the test

Serial Number 10/695,010
Docket Number YOR920030018US1
Amendment

write signals; wherein the write signal generator selectively modifies the write signals based upon the orientation of the reference cell after the reference cell has received the test write signals;

wherein said test write signals are varied with respect to time and wherein the write signals are modified based upon a measured phase difference between the test write signals and the corresponding variations in the orientation of the magnetization of the reference cell.

9. (Currently amended) The circuit of claim 8 wherein the ~~reference cell~~ compensation circuit further comprises an array of reference cells having different attributes and wherein the write signal generator selectively modifies the write signals based upon which reference cells in the array of reference cells had the ~~orientation~~ orientations of their ~~magnetization~~ magnetizations altered in response to receiving the test write signals.

10. (Currently amended) The circuit of claim 8 wherein the ~~reference cell~~ compensation circuit further comprises an array of reference cells having similar attributes, the test write signals received by each reference cell ~~[[is]]~~ are modified by a signal modification circuit associated with each reference cell, and the write signals are modified based upon which reference cells ~~[[had]]~~ have the orientation of their magnetization altered in response to being sent the test write signals.

11. (Currently amended) The circuit of claim 8 wherein each magnetic memory cell comprises ~~[[an]]~~ a rotational magnetic memory cell.

12. (Currently amended) The circuit of claim 10 wherein each signal modification circuit comprises wires for carrying the test write signals to an associated reference cell wherein the wires for each signal modification circuit ~~has~~ have different attributes.

Serial Number 10/695,01C
Cocket Number YOR920030C18US1
Amendment

13. (Canceled)

14. (Original) The circuit of claim 13 wherein the test write signals are varied sinusoidally.

15. (Currently amended) A method for compensating for changes in an optimum operating point for write signals used to alter an orientation of a magnetization in a magnetic memory cell in an array of magnetic memory cells, said method comprising: measuring changes in switching characteristics of a reference magnetic memory cell; and modifying attributes of the write signals used to alter the orientation of the magnetization in the magnetic memory cells based upon the measured changes in the switching characteristics of the reference magnetic memory cell;

wherein the step of measuring changes in switching characteristics of a reference magnetic memory cell comprises sending test signals to an array of similar magnetic memory cells such that each magnetic memory cell is driven by a different magnetic field and determining which magnetic memory cells have the orientation of their magnetization altered by the test signals.

16. (Currently amended) The method of claim 15 wherein the step of measuring changes in switching characteristics of ~~[[a]]~~ the reference magnetic memory cell further comprises sending test signals to ~~a series~~ the array of magnetic memory cells having predetermined attributes and determining which reference magnetic memory cells cell has ~~have~~ the orientation of ~~their~~ its magnetization altered by the test signals.

17. (Canceled)

18. (Currently amended) The method of claim ~~17~~ 15 wherein the magnetic memory cells

Serial Number 10/695,010
Docket Number YOR920030018US1
Amendment

comprise rotational magnetic memory cells.

19. (Currently amended) The method of claim ~~17~~ 15 wherein the different magnetic fields for driving the reference magnetic memory eells cell is ~~are~~ created by providing each reference magnetic memory cell with write wires having ~~[[a]]~~ different attributes.

20. (Currently amended) The method of claim 15 wherein the step of measuring changes in switching characteristics of ~~[[a]]~~ the reference magnetic memory cell comprises sending sinusoidally varying test signals to ~~[[a]]~~ the reference magnetic memory cell and measuring a phase difference between the test signals and changes in the orientation of the magnetization of the reference magnetic memory cell.